Summary pdf Guide:
Free Distributables with Standalone EES exe files

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Introduction

This concise guide presents a unique collection of stand-alone executable programs (distributables) developed from Engineering Equation Solver (EES) applications created by Dr. M. Thirumaleshwar. Each program performs specialized thermal or cryogenic calculations without requiring EES to be installed, allowing students, teachers, and practicing engineers to analyse, verify, and design engineering systems with ease.

These distributables were originally prepared to accompany the author's free educational ebooks on Heat Transfer, Refrigeration, Cryogenics, and Vacuum Technology. Together, they form an integrated, self-learning and design resource, enabling users to bridge theoretical knowledge with practical computation.

All software distributables are provided free of cost, for educational and research purposes. The relevant download links are included within this guide.

Dr. M. Thirumaleshwar
October 12, 2025

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Various "Distributables" may be generally classified as follows:

- **Category 1 – Cryogenic & Vacuum System Design Tools**

Vacuum Technology Distributables

Pump-down time calculator (with/without outgassing)

High-vacuum system simulation

Gas-load estimation

Leak-rate evaluation

Cryogenic Instrumentation Distributables

Sensor calibration & response models

Pressure-transducer behaviour

Thermocouple / diode thermometer conversion

Signal-conditioning design aids

🔹 **Category 2 – Thermophysical Property Tools**

Refrigerant Property Calculator

Common refrigerants (R-12, R-22, R-134a, R-404A, etc.)

Output: p-T-h-s tables, quality, COP estimator

Cryogenic Fluid Property Calculator

Helium, Hydrogen, Nitrogen, Oxygen, Neon, Argon
Output: ρ, Cp, h, s, μ, k at given T or p

Optional plotting (if distributable supports graph output)

🔹 **Category 3 – Thermal-System Performance Tools**

Heat-Exchanger Design Verifiers (shell-and-tube, double-pipe, plate)

Refrigeration-cycle simulator (vapour-compression cycle)

Cryogenic-liquefaction cycle analyser (Claude / Linde cycles)

🔹 **Category 4 – Utility & Support Tools**

Property interpolation utilities

Unit-conversion mini-apps

Material-property reference look-ups

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About the Author

Dr. M. Thirumaleshwar obtained his B.E. in Mechanical Engineering from Karnataka Regional Engineering College, Surathkal, India, M.Sc. in Cryogenics from the University of Southampton, U.K., and Ph.D. in Cryogenics from the Indian Institute of Science, Bangalore. He has served in leading research and academic institutions including Bhabha Atomic Research Centre (BARC), Bombay, Centre for Advanced Technology (CAT), Indore, and as Guest Collaborator in the Superconducting Super Collider Project, Texas, U.S.A., as well as in several engineering colleges as Professor, Head of Department, and Principal.
A dedicated teacher and prolific author, he has published several free engineering ebooks on Thermodynamics, Heat Transfer, and Cryogenics, benefiting students and teachers worldwide.
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A. **Vacuum Technology Distributables:**

1. **Cryopumping problems …Excel sheet**

https://app.box.com/s/jfw7kgqmht6lh3z325uyp1btlwtnlnce

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2. **Conductances, pumpdown time…etc….Excel sheet**

https://app.box.com/s/zkjglmpnbcbldlr0d30m9l1ta1f1yxtz

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3. **Pump down to medium Vacuum.EXE… EES standalone program .will work in a Computer/ Laptop..,even when EES is not installed in that Computer/ Laptop**

https://app.box.com/s/fpt39ig70y5bj2xao2jb6yoa0rz6v90m

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4. **Pipe conductances.EXE….EES Standalone program….**

https://app.box.com/s/yosua3yqs4qubicnvehhgke7p6tfqd2v

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5. **Pump down time of a High vacuum system with outgassing.EXE**

https://app.box.com/s/9mfs34rk4kn66nqb368v5usnl5h3p3aa

6. **S-eff for pumpdown to P-f.EXE**

https://app.box.com/s/asl4s6zhk7vn8nzn3l8ykymftk13392i

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7. **Pumpdown time - RVP.EXE**

https://app.box.com/s/j5tj6vuvm4qkthqlsta60rkauze9g8ec

B. Cryogenic Instrumentation Distributables:

Stand-alone EXE programs written in EES:

1. **Thermodynamic Liquid level gauge for LH2.EXE:**

https://app.box.com/s/gngsjmf80rwjpmxul8flwjayroel3gee

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2. **Capacitance quality meter.EXE**

https://app.box.com/s/b8bbz8wcytbwvipwji7rsers9lzd88z9

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3. **Capacitance Liquid level probe.EXE**

https://app.box.com/s/6my8yagb2hfog0nv0altqua8srt5xjv3

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4. **Turbine flow meter.EXE**

https://app.box.com/s/e1ayx0jobs3q9ifkvhbjagy3ezivfwsi

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5. **Hydrostatic Lsve gauge.EXE**

https://app.box.com/s/ok92j4op0ba42g94jcca6joo7p3z9kz1

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6. **Cryogenic Vapor Pressure Thermo.EXE**

https://app.box.com/s/xl3x8qwy4yhbsmx0vmxhbgwcdmu5i5cz

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7. **Magnetic Thermometer.EXE**

https://app.box.com/s/477gt7wl94xtpao8fkyni2wz0mhbyawg

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8. **Constant volume gas Thermometer.EXE**

https://app.box.com/s/goztumtx55nle953st9u8x1xs2j84778

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9. **Germanium Semiconductor Thermometer.EXE**

https://app.box.com/s/6ta5m1rzy0nvb28doml7w89xe22hjpyi

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10. **Cryogenic Thermocouples.EXE**

https://app.box.com/s/jzi2jbis73wpw1cto0tykcss5bvvr3jb

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11. **Carbon Resistance Thermometer.EXE**

https://app.box.com/s/gm46u6lxeehgpzz8k7rpjb2p3vcesp6q

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12. **Platinum (Pt) resistance.EXE**

https://app.box.com/s/dfl4746dfn0qg1njgb18ehk9wv4lbzbd

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13. **Cryogenic Venturimeter.EXE**

https://app.box.com/s/szrdktnvzx3ipu0bkae3t5i4h6l1mshp

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14. **Cryogenic Orifice meter.EXE**

https://app.box.com/s/ngg7o7y6pc4emhcj44k7vecl27mjopx3

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15. **Copper - Constantin Thermocouple.EXE**

https://app.box.com/s/k6k6ttvzhnq7k812n0lpmkvk7pjisb1q

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C. Refrigerant Property Calculator:

1. **Refrigerant Fluid props - single phase.EXE**

https://app.box.com/s/bbyqopxke1uxrgto81dpw009c17r2lgg

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2. **Refrig Fluids - 2phase props - 2.EXE**

https://app.box.com/s/05k6wp29db2ywz9datu5n1sq5c8i0lz1

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3. **Units.EXE**

https://app.box.com/s/4i9dt7k3cl1c9vsbqb96cl7xa7sdz46t

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4. **Actual Refrig cycle.EXE**

https://app.box.com/s/u72d5nwjqvqk068hur1nw5apd2iqd5lu

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D. Cryogenic Fluids Property Calculators:

Readme1st.docx:

https://app.box.com/s/by5888zu5mpouxf6nspuhgufswnv72xf

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1. **CryoFluid props at NBP.EXE**

https://app.box.com/s/s3uyocc26788dtvahz1da93rf5gqv47b

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2, Cryogenic Fluid props- Two phase - alternate.EXE

https://app.box.com/s/by41229214xejpsi15zvo1p0c63c7fzi

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3. Cryogenic Fluid Props - Superheated.EXE

https://app.box.com/s/oo0nz5b5kertzxi0mor1cvinrtx43si4

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4. NIST - Thermophysical props of Fluid systems:

https://webbook.nist.gov/chemistry/fluid/

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E. Heat Exchangers:

Download the free ebook Authored by Dr. M. Thirumaleshwar, published by bookboon.. " Software Solutions to Problems on Heat Transfer - Heat Exchangers", which deals with overall Heat tr coeff, fouling factors, LMTD and NTU - Effectiveness methods of design…etc

https://app.box.com/s/wrarcu74z84jkwv9qvsza0atcqoo93bl

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F. EES Distributables for Cryogenic Engineering …(SUMMARY)

1. **Conductances, pumpdown times, cryopumping…etc.RAR**

https://app.box.com/s/gxnk0t3ijtgi7sfmlq3xq5so9pxv0y6y

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2. **Refrig Fluid props.RAR**

https://app.box.com/s/q6n9xplaximq4d0hftkdinouxeojmid5

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3 (a). Cryog Materials pops Distributables

https://app.box.com/s/lt6ra986hwu6xohc43h9o8knikph7qdo

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3.(b). NIST - Cryog Materials Props.docx:

https://app.box.com/s/glt6jmm4jupa8zy41lcgskstgj789wy6

3(c): Cryogenic Material properties calculators:

https://trc.nist.gov/cryogenics/calculators/propcalc.html

4. Cryog Instrumentation Distributables

https://app.box.com/s/q984573s0xgm12873wdcxw04zkqy6gu6

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5. Cryog Liquefn systems distributables.RAR

https://app.box.com/s/1d6u9qkcr71vr1keyrw0yu73by6jyjga

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6. Cryog Refrig systems Distributables.RAR

https://app.box.com/s/1d6u9qkcr71vr1keyrw0yu73by6jyjga

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7. Cryog Fluid props - Distributables

https://app.box.com/s/1d6u9qkcr71vr1keyrw0yu73by6jyjga

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